

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. J. F. Hellweg, Superintendent United States Naval Observatory. Data furnished by Naval Observatory in cooperation with Harvard, Yerkes, Perkins, and Mount Wilson Observatories. The differences of longitude are measured from central meridian, positive west. The north latitudes are plus. Areas are corrected for foreshortening and are expressed in millionths of sun's visible hemisphere. The total area, including spots and groups, is given for each day in the last column]

Date	Eastern standard civil time	Heliographic			Area		Total area for each day
		Diff. long.	Longi- tude	Lat- tude	Spot	Group	
1932							
Sept. 1 (Mount Wilson).....	h m	°	°	°	10		10
Sept. 2 (Naval Observatory).....	11 20	+42.0	277.5	-9.0	6		6
Sept. 3 (Naval Observatory).....	11 30	+54.0	276.2	-9.0			
Sept. 4 (Naval Observatory).....	10 21		No spots				
Sept. 5 (Naval Observatory).....	12 35		No spots				
Sept. 6 (Naval Observatory).....	13 17		No spots				
Sept. 7 (Naval Observatory).....	11 25		No spots				
Sept. 8 (Naval Observatory).....	10 19		No spots				
Sept. 9 (Naval Observatory).....	14 41		No spots				
Sept. 10 (Naval Observatory).....	12 4		No spots				
Sept. 11 (Naval Observatory).....	10 42		No spots				
Sept. 12 (Naval Observatory).....	11 34		No spots				
Sept. 13 (Naval Observatory).....	11 53	-60.0	29.9	+6.0	6		6
Sept. 14 (Naval Observatory).....	10 40		No spots				
Sept. 15 (Perkins Observatory).....	11 59		No spots				
Sept. 16 (Naval Observatory).....	13 30		No spots				
Sept. 17 (Naval Observatory).....	11 12		No spots				
Sept. 18 (Naval Observatory).....	13 5		No spots				
Sept. 19 (Naval Observatory).....	11 46		No spots				
Sept. 20 (Mount Wilson).....	13 0		No spots				
Sept. 21 (Mount Wilson).....	12 30	-27.0	303.7	+12.0	12		12
		+70.0	400.7	-3.0	32		44
Sept. 22 (Mount Wilson).....	12 50	-12.0	305.4	+12.0	7		7
Sept. 23 (Naval Observatory).....	11 2		No spots				
Sept. 24 (Naval Observatory).....	10 14		No spots				
Sept. 25 (Naval Observatory).....	13 32		No spots				
Sept. 26 (Naval Observatory).....	10 57		No spots				
Sept. 27 (Mount Wilson).....	12 30	+24.0	275.6	+12.0	12		12
Sept. 28 (Naval Observatory).....	11 29	+32.0	270.9	-7.0	9		9
Sept. 29 (Naval Observatory).....	10 22	+44.0	270.3	-7.0	12		12
Sept. 30 (Naval Observatory).....	10 32	+61.0	274.1	-6.0	6		6
Mean daily area for Sep-tember.....							4

PROVISIONAL SUN-SPOT RELATIVE NUMBERS FOR SEPTEMBER, 1932

(Dependent alone on observations at Zurich and its station at Arosa)

[Data furnished through the courtesy of Prof. W. Brunner, University of Zurich, Switzerland]

September, 1932	Relative numbers	September, 1932	Relative numbers	September, 1932	Relative numbers
1-----	7	11-----	0	21-----	19
2-----	7	12-----	14	22-----	8
3-----	7	13-----	7	23-----	0
4-----	0	14-----	0	24-----	8
5-----	0	15-----	0	25-----	8
6-----	0	16-----	0	26-----	0
7-----	0	17-----	0	27-----	8
8-----	0	18-----	0	28-----	8
9-----	0	19-----	8	29-----	8
10-----	0	20-----	0	30-----	7

Mean: 29 days=4.0.

a= Passage of an average-sized group through the central meridian.
b= Passage of a large group or spot through the central meridian.
c= New formation of a center of activity: E, on the eastern part of the sun's disk; W, on the western part; M, in the central zone.
d= Entrance of a large or average-sized center of activity on the east limb.

AEROLOGICAL OBSERVATIONS

[The Aerological Division, W. R. Gregg, in charge]

By L. T. SAMUELS

Free-air temperatures for September were close to normal in practically all cases with negative departures predominating. (Table 1.) Relative humidity departures were generally negative except at the southern stations.

Free-air resultant wind velocities for the month were considerably below normal with variable resultant direc-

tions at most stations, the departures from normal being greatest in the southern sections of the country. In these sections a preponderance of northerly components prevailed as compared with the normal resultant directions.

Airplane observations were made on five days during the month at Fairbanks, Alaska, in connection with the International Polar Year program.

TABLE 1.—Free-air temperatures and relative humidities during September, 1932

TEMPERATURE (° C.)

Altitude (meters) m. s. l.	Atlanta, Ga. (303 meters) ¹		Chicago, Ill. (195 meters) ²		Cleveland, Ohio (246 meters) ¹		Dallas, Tex. (146 meters) ³		Ellendale, N. Dak. (444 meters)		Norfolk, Va. (3 meters) ⁴		Omaha, Nebr. (300 meters) ⁴		Pensacola, Fla. (2 meters) ⁴		San Diego, Calif. (9 meters) ⁴		Washington, D. C. (2 meters) ⁴	
	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal
Surface.....	19.1	(°)	12.9	(°)	14.4	(°)	21.1	(°)	14.7	+0.3	20.8	-2.4	12.9	(°)	23.0	-1.1	18.7	-1.8	18.2	-2.6
500.....	19.7	(°)	15.6	(°)	16.6	(°)	22.7	(°)	14.7	+0.3	19.7	-1.8	14.6	(°)	22.6	-0.5	15.6	-1.6	17.9	-1.4
1,000.....	18.7	+0.4	14.6	-0.4	14.6	-0.4	21.1	+1.4	13.2	+0.3	16.7	-2.3	16.5	+0.2	19.9	-0.7	20.9	+1.7	16.7	-0.9
1,500.....	15.7	+0.1	11.8	-0.4	11.0	-1.2	17.6	+0.2	10.3	-0.6			14.1	0.0						
2,000.....	12.5	-0.5	9.3	-0.4	8.6	-1.1	14.8	0.0	7.5	-0.9	11.7	-1.7	11.6	+0.2	14.6	-0.5	19.7	+2.6	12.1	-0.9
2,500.....	9.7	-0.5	6.8	-0.2	6.3	-0.7	12.3	0.0	4.8	-0.7			8.8	+0.5						
3,000.....	7.1	-0.4	4.0	-0.6	3.3	-1.3	10.0	+0.3	2.0	-0.5	7.2	-0.7	5.8	+0.6	9.5	-0.1	12.3	+0.9	7.4	-0.8
4,000.....	1.0	-1.2	-1.9	-1.0	-2.5	-1.6	3.7	-0.6	-0.9	+2.1			-0.5	+0.1	4.0	+0.1			0.6	-1.7
5,000.....	-5.6	-1.6	-8.1	-0.6	-9.2	-1.7	-1.9	-0.7					-7.4	-1.4	-1.4	+0.3				

RELATIVE HUMIDITY (PER CENT)

Surface	Atlanta, Ga. (303 meters) ¹		Chicago, Ill. (195 meters) ²		Cleveland, Ohio (246 meters) ¹		Dallas, Tex. (146 meters) ³		Ellendale, N. Dak. (444 meters)		Norfolk, Va. (3 meters) ⁴		Omaha, Nebr. (300 meters) ⁴		Pensacola, Fla. (2 meters) ⁴		San Diego, Calif. (9 meters) ⁴		Washington, D. C. (2 meters) ⁴	
	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal
Surface.....	87	(°)	82	(°)	78	(°)	84	(°)	58	-10	78	+4	87	(°)	86	0	79	+7	76	+1
500.....	83	(°)	65	(°)	67	(°)	68	(°)	57	-9	68	+1	72	(°)	80	0	89	+9	65	-3
1,000.....	76	+6	56	-9	66	+1	65	-5	53	-7	66	+2	46	-13	78	+2	58	+2	61	-2
1,500.....	73	+3	53	-10	69	+6	73	+10	53	-2			44	-12						
2,000.....	70	+4	49	-10	58	-1	73	+15	52	0	64	+2	44	-10	69	+1	30	-1	57	-3
2,500.....	63	0	45	-11	53	-3	63	+11	49	-3			44	-11						
3,000.....	57	-3	43	-9	52	0	54	+6	47	-4	59	+5	45	-9	61	+1	26	+1	47	-6
4,000.....	56	-2	44	-3	43	-4	59	+19	28	-18			44	-7	57	+2			47	-2
5,000.....	51	-18	39	-5	41	-3	64	+28					39	-10	64	+7				

¹ Temperature and humidity departures based on normals of Due West, S. C.

² Temperature and humidity departures based on normals of Royal Center, Ind.

³ Temperature departures based on normals determined by interpolating between those of Groesbeck, Tex., and Broken Arrow, Okla. Humidity departures based on normals of Groesbeck, Tex.

⁴ Naval air stations.

⁵ Temperature and humidity departures based on normals of Drexel, Nebr.

⁶ Surface and 500 meter departures omitted because of difference in time between airplane observations and those of kites upon which the normals are based.

Weather Bureau airplane observations made near 5 a. m.; Navy airplane observations near 7 a. m.; Ellendale kite observations near 9 a. m. (Seventy-fifth meridian time).